takes up oxygen and becomes more and more blackened by its action had long been known. But it was reserved for Liebig to found on the fact the measurement of oxygen. By treating the gas to be examined first with potash and then with pyrogenic acid, he combined the investigation for oxygen with that of carbonic acid.

Passing to the researches he effected by the instrumentality of his inventions, there came the fulminating compounds. At a remote period Liebig compared fulminic with picric acid. There was no satisfactory analysis of the method of fusing substances with prussiate of potash, and he first showed how iron is taken up by ferrocyanides, and his experiments are the foundation of the modern manufacture. Another valuable point was his simple process of obtaining cyanide of potassium. It is now manufactured on a large scale on his process, and is thus extensively used in electrotyping. This discovery led him to others. Liebig and Wöhler furnish us with the group of aromatic compounds which stream forth from benzol in infinite variety. At the conclusion of the description of their experiments they say their inquiries arrange themselves round a group of acids. This analogy induced them to consider the group as a kind of compound element, to which they gave the name of benzol.

When a chemist is fortunate enough to encounter some such guide in the midst of unknown nature, he has good cause to congratulate himself. If even now after forty years the results of this research have such fascination, what were the feelings of contemporaries? One of them "discerns the dawn of a new day," and suggests orthrine for the name of the new compound element from ὄρθρος, "day-break." Now, the lecturer should by rights unfold before their eyes the chain from oil of almonds to benzolic acid. But time reminded him to hasten on. The uric acid group furnished a path which had not yet conducted us to the goal. Uric acid was not all unknown in 1834, when Liebig established its formula. It had been known in 1734, but it was not till 1850 that a youth in his 19th year discovered the most fertile source of the compound. Liebig and Wöhler soon showed that its mutability, its liability to chemical change, entitled them to reap rich harvests from it. Sixteen new and most remarkable bodies were at a single stroke incorporated into the history of chemistry. Only one has since disappeared and called for rectification, and no better proof could be given of their scrupulous accuracy. They showed how clearly they discerned the synthetic direction which organic chemistry was about to take. Sugar, silicine, morphine would be, they say, synthetically prepared. One more illustration must suffice—the remarkable results in the investigation of alcohol. His first experiments were in 1832, when his inquiry, undertaken for purely scientific and abstract ends, led to the discovery of chloral and chloroform. He discovered hydrate of chloral and its beautiful crystalline form. In 1847, fifteen years after its discovery, chloroform was used for the first time as an anæsthetic, and twenty years more elapsed before Liebreich found a similar use for chloral. At the present day the chemical factories of Berlin alone produce 100 kilos. a day of the principal anæsthetic.

Liebig denied the presence of the olefiant gas previously ascribed to alcohols, and gave their chief constituent the name of ether, and although according to our present view the relation between alcohol and ether has changed, no one now speaks of the olefiant theory. The new system of chemical notation introduced by two French chemists was nowhere earlier championed than here, and by Faraday. To that England owes the honour of being foremost to recognise the truth of the new doctrine. Its modification of Liebig's formulæ extends also to his ether. Williamson elucidated the question with striking success, but Williamson owed to Liebig the very agents he so successfully employed. Liebig "had no doubt we should succeed in the analysis of ether." Liebig's dream was realised by Frankland.

Our respect and our admiration are due to Liebig not for his scientific labour alone: we learn from him that anxiety to discover abstract laws is not to be dissociated from efforts for the well-being of our race. The lecturer remembered a little incident so illustrative of Liebig's goodness of heart that he ventured to relate it. He then told the story of a broken soldier, whom, during a tour in the Tyrol, Liebig not only helped with florins, but procured quinine for by a toilsome walk over mountains. Of Faraday's kindness he had a touching example. A gentleman had handed him a letter of 1834, in which Faraday wrote to a student who had engaged, like many others, in a dream about matter and atoms, and was anxious to submit his ramblings in philosophic dreamland to the greatest chemist of the day. He forwarded it with the suggestion that it was worth while to test it. Overwhelmed, as Faraday then was, with work, he answered not with neglect or with cheap flattery; he wrote to the unknown youth as follows:—

"I have no hesitation in advising you to experiment in support of your views, because, whether you confirm or confute them, good must come out of your experiments. With regard to the views themselves, I can say nothing of them except that they are useful in exciting the mind to inquiry. A very brief consideration of the progress of experimental philosophy will show you that it is a great disturber of preconceived theories. I have thought long and closely on the theories of attraction and of particles and atoms of matter, and the more I think, in association with experiments, the less distinct does my idea of an atom or a particle of matter become."

In whatever epoch, continued the lecturer, we shall seek for models of human existence, we can find no two examples more conspicuous for their intellectual worth, more admirable for their lofty views of duty, than Michael Faraday and Justus von Liebig.

NOTES

The *Enterprise*, with the eclipse party for Camorta (Nicobar Islands), left Galle on the 18th inst. The *Baroda* with the Siam party should arrive at Singapore to-day, and a telegram has been received at the Admiralty that the Colonial steamer will replace the *Charybdis* in the journey to Bangkok, as the former is faster and possesses more accommodation. Letters have been received from the expedition at Aden. Drs. Vogel and Schuster have been engaged on board in photographically determining the chemical intensity of different parts of the solar spectrum at different times of the day, and most important results have already been secured.

Her Majesty the Queen has been graciously pleased to confer upon Mr. Henry Cole, C.B., the distinction of a Commandership of the Bath, in recognition of his eminent public services. The Executive Committee of the Cole Testimonial Fund have authorised the preparation of a decorative memorial tablet, with portrait of Mr. Cole in mosaic, as well as a marble bust. It is intended to offer these to public institutions, and the balance of the amount subscribed will be placed at the disposal of Mr. Cole.

The Royal Irish Academy has given its sanction to the following grants from the fund placed at its disposal for aiding scientific researches by providing suitable instruments and materials:—25*l.* to Mr. Edward T. Hardman, for "Chemico-Geological Researches;" 30*l.* to Mr. W. H. Mackintosh, for "Researches as to the Structure of the Echinoidea;" 25*l.* to Mr. G. Porte, for "Micro-Photographic Experiments;" 40*l.* to Dr. Leith Adams, for "Explorations in the Caves of Shandon;"

25*l.* to Dr. Hansdel Griffiths, for "Experiments on the Effects of Certain Drugs on the Circulation;" 25*l.* to Dr. Reuben Harvey, for "Researches on Staining Reagents used in Histology;" and 30*l.* to Prof. A. H. Church, Cirencester, for report on the analysis of some rare mineral arseniates and phosphates.

AT the meeting of the Academy held on the 16th March, the following were elected honorary members in the department of Science:—Joseph Bertrand, Paris; Bernard von Cotta, Freiburg; and Asa Gray, Cambridge, U.S.

THE following parts of vol. xxv. of the Transactions of the Royal Irish Academy have just been published:—Part 10, Researches in Chemical Optics, by the Rev. J. H. Jellett, B.D. Part 11, Report on the Strength of single-riveted Lap Joints, by Bindon B. Stoney, A.M.; with plate and tables. And the following are in the press:—Parts 12 and 13, On the First Comet in 1845; and On the Binary Star μ^2 Bootis, by Dr. Doberck. Part 14, On the Anatomy of Insectivorous Edentates, by A. Macalister, M.B.; with two plates. Part 15, On the Fern Flora of the Seychelles, by J. G. Baker, F.L.S.; with Notes on some of the Species, by E. P. Wright, M.D.; with four plates. Part 16, On the Structure of the Spines of the Diadematidæ, by H. W. Mackintosh, A.B.; with three plates.

TWO prizes of 30*l.* and 20*l.* each, the gift of Mr. J. T. Mackenzie, of Kintail, are offered by Aberdeen University for the best and second-best essays on "The Conservation of Energy, considered especially with reference to the Mechanical Theory of Heat." The essays must be sent in on or before the 1st of November next.

THE Vice-Chancellor of Cambridge University has announced that the election of a Jacksonian Professor of Natural Experimental Philosophy will be held in the Senate House on Tuesday, the 13th of April. The Rev. J. Clough Williams Ellis, M.A., Fellow of Sidney, who acted as Deputy Jacksonian Professor for two years, and Mr. James Stuart, M.A., Fellow of Trinity, are candidates for the vacant appointment.

DR. VON MICLUCHO MACLAY, the Russian traveller, has recently returned to Singapore from a journey into the interior of Tabore. The object of his expedition was to gather information about wild and almost unknown races inhabiting the Tabore jungles. These tribes are named Jakuns, Oran Rajet, and Oran Utan. As these races always withdraw deeper into the interior, seeking shelter in the forest and mountains on the approach of strangers, Dr. Maclay had to extend his explorations into places never yet visited by Europeans, and rarely even by the Malays. His travels occupied fifty days, proceeding sometimes by boat, but performing the greater part of the journey on foot. Dr. Maclay has, it is stated, succeeded in obtaining much valuable information regarding the habits and dispositions of these unknown tribes.

THE Agassiz Memorial Fund of 300,000 dollars is said to be nearly raised. The "teachers' and pupils' fund" alone exceeds 9,000 dollars.

AN International Horticultural Exhibition is to be held at Cologne from the 25th August till 26th September. All communications must be addressed, post paid, to the Horticultural Society "Flora," Cologne, from whence all necessary information can be obtained.

THE Council of the Royal Dublin Society advertise for candidates to fill the post of Keeper of the Minerals in their museum. The salary is 100*l.* a year, paid by a Government grant, and the keeper acts the part to a certain extent of assistant to Dr. Carte, the director. The gentleman appointed Keeper of the Minerals will also be elected Analyst to the Society and have charge of their Chemical Laboratory, at an additional salary of 50*l.* per annum, with fees for analysis, the scale of fees chargeable to members of the Society being regulated from time to time by the Council. The interests of the mineralogical collection of the Society would appear to be perhaps unavoidably overlooked by the above arrangements, as the person elected must look for a livelihood to the fees for analysis.

LETTERS from Nordenskjold, the celebrated Swedish polar explorer, intimate that he will very shortly leave Tromsöe for Novaja Semlja. He will spend only a few months on that island, and try a land journey from the mouth of the Lena or Obi throughout Northern Russia, travelling southwards, if possible, by boat. The funds are supplied by Mr. Oscar Dickson, the well-known Gottenburg merchant.

A SHOCK of earthquake was felt on the night of March 17 at several places in the province of Ravenna.

A NUMBER of large meteors were observed in several parts of France on the 9th and 10th of March. The meteor of Feb. 10 was seen in an immense number of localities, and additional notices are daily arriving at the Observatory.

M. DUMAS, Perpetual Secretary of the Academy of Sciences, is a candidate for the French Academy as well as M. Jules Simon, the ex-Minister for Public Instruction, who is an influential member of the department of Moral and Political Sciences. According to the rules enacted when the Institute was created, no member of one class could become a member of another. The rule was abolished when the academical constitution was remodelled by Napoleon I., but many academicians adhered to it. Arago refused several times to become a candidate in the French Academy.

AN edition of Laplace's works was published by the French Government about thirty years ago, and is now almost out of print. A new edition is preparing; it will be edited by the Academy under the superintendence of M. Dumas, assisted by a member of the Section of Geometry. A copy of the work will be presented by the Institute, at the anniversary meeting, to the pupil of the Polytechnic School who has obtained the first place.

M. WALLON, the new Minister of Public Instruction, has declined to appoint as his general secretary a member of the Versailles Assembly who desired the appointment, and has nominated M. Jourdain, a general inspector of the University and a member of the Institute. He has appointed as his *chef du cabinet*, not as is usually the case, a private friend or a member of his family, but M. Delfour, who is one of the ablest teachers in the Paris College. He has appointed M. G. Pouchet, the son of the celebrated advocate of spontaneous generation, to fill the room of M. Paul Bert, Professor of Physiology to the Sorbonne, as the latter, being a member of the National Assembly, cannot attend to his professorial duties.

DR. FORBES WATSON, director of the India Museum, has published in a separate form the paper he read at the Oriental Congress in September last, and of which, at the time, we gave a report. It is entitled, "On the establishment in connection with the Indian Museum and Library of an Indian Institute for Lecture, Inquiry, and Teaching; its influence on the promotion of Oriental studies in England, on the progress of the higher education among the natives of India, and on the training of candidates for the Civil Service of India." The unsatisfactory state of the museum and library in the attics of the India Office is notorious. The collections in the museum are to be housed for three years in the eastern galleries of the International Exhibition building. But this is only temporary; and in the interests both of science and of the commercial and political welfare of India, a special permanent building for the purposes so ably advocated by Dr. Watson is urgently required. We hope the recent memorials of the Chambers of Commerce of the United Kingdom, added to the long-continued exertions of the Asiatic and other learned societies, will have some success with her Majesty's Government. The site proposed by Dr. Watson for an Indian Institute is close by the India Office. Allen and Co. are the publishers of Dr. Watson's paper.

A BILL to reform the Gregorian year has been recently introduced into the American House of Representatives. Its essential provisions are that the beginning of the year shall correspond to the winter solstice, and its principal divisions to the summer solstice and the equinoxes, the latter provision being intended to take the place of the intercalary rule of the Gregorian calendar, thus regulating the divisions by the astronomical conditions of the earth's orbit.

THE report of Capt. Elton on the Zanzibar copal trees (*Trachylobium Hornemannianum*) has become so well known, owing to its republication in many English journals, that it will be interesting to the botanical readers of NATURE to know that seeds taken from fruits collected by Capt. Elton and sent to the museum at Kew, through the Foreign Office, have not only germinated, but are growing into strong healthy plants; some of them are six or more inches high, and have six or seven pairs of leaflets. They are interesting, not only on account of the valuable fossil resin yielded by the old trees, but also on account of their being the first plants grown in Europe. Though there is always a steady demand for good copal in England, there can be no doubt that large quantities are still to be found beneath the African soil. In Loanda, on the opposite side of the African continent, large deposits of copal are known to exist, but owing to a superstition among the natives the resin is not allowed to be touched.

THE discovery of new medicinal products appears to be on the increase just now. Within the space of a few months we have heard of the extraordinary tonic effects of Boldo (*Boldoa fragrans*), which, however, seems destined to pass into oblivion. This was succeeded by Jaborandi, which is still occupying the attention of the medical profession, and which, unlike Boldo, is being reported upon very favourably. Two bales of another new product, under the name of Carnauba Root, are reported to have recently arrived at Liverpool. It is the root of the Brazilian Wax Palm (*Copernicia cerifera*), and is described as an excellent medicine for purifying the blood; equal, indeed, to sarsaparilla. It is a question, however, whether the latter has any real medicinal properties. The Carnauba Root as imported is said to be in pieces several feet in length, of an average thickness of three-eighths of an inch, of a mixed greyish and reddish brown colour, giving off here and there small rootlets. The cost is said to be not more than half that of sarsaparilla.

ONE of the chief products of Auckland, New Zealand, is Kauri gum, the semi-fossil resin of *Dammara australis*. It is specially a product of this province of New Zealand, being found in no other part of the world. The resin is found at a depth of from two to three feet from the surface over a large area of land once covered by Kauri forests, but now barren and almost unfit for cultivation. In these waste lands there is no restriction enforced by Government as to the right of digging for the resin, and it is calculated that in various parts of Auckland as many as 2,000 men have found employment at one time digging up the Kauri resin. This number, however, is now considerably reduced, owing to the demand for labour in other directions; nevertheless, large quantities of the resin are required by varnish-makers in this country, and consequently many persons still find employment in digging it. The Maoris bring a considerable quantity to market. The best quality fetches in the market at Auckland from 30*l.* to 33*l.* per ton. At this price the gum-diggers are able to earn from 1*l.* 10*s.* to 4*l.* per week; the average earnings, however, are about 2*l.* per week. In the three years from 1870 to 1872, there were exported from Auckland 14,276 tons of Kauri resin, valued at 497,199*l.*

UNDER the title of "Note sur les Tremblements de Terre en 1871, avec Suppléments pour les Années antérieure de 1843 à 1870," M. Alexis Perrey, of the Belgian Academy, publishes a continuous list of earthquakes and of volcanic eruptions which have occurred from 1843 to 1871, one-half of the volume being occupied with those of the latter year. M. Perrey's object is simply to present as complete a list as possible of these phenomena, and he is therefore anxious to receive information of any omissions, so that future editions may be made still more complete. The list will no doubt be found of great use to those who are investigating seismic phenomena. It is published by Hayez, of Brussels.

A NEW phase in the archæology of the United States is shown by the researches of Mr. Putnam in the caves of Kentucky, as he has found that many of the caverns there were used for burial, as in Europe, and that others were used for habitations. Many relics and skeletons have been brought to light by his investigations; and further research, which will be carried on this year in connection with the Geological Survey of the State, will undoubtedly add much of importance to the archæology of that country. Enough evidence has already been obtained to prove that the caves were very extensively used by an early race of men, but the race to which the remains should be referred is not yet determined. In his investigations in the vicinity of a group of mounds in Monroe County, Kentucky, Mr. Putnam was also quite fortunate in finding a peculiar mode of burial that has not before been noticed, inasmuch as the bodies, in one grave ten in number, were buried in a circular grave, made by placing erect slabs of limestone around a floor laid with thin stones. The bodies had all been placed in the grave at the same time, and evidently in a sitting posture, with their backs against the slabs. The skulls show a race remarkable for the shortness of their heads, and in one case at least exhibited a posterior flattening. The bones of the skeletons were quite thick and massive, and the shin-bones were remarkably flat.

WE have to record the recent publication of another portion of the important work upon the economical and natural history of the insects of the United States, undertaken by Prof. T. Glover, of the Agricultural Department at Washington, and upon which he has been engaged for many years. Many years ago Prof. Glover commenced illustrating the entomology of the country by engraving figures of the various species of insects directly upon copper plates, and he has now several hundred such plates completed, containing illustrations of thousands of species, among them nearly all of the various orders that are in any way interesting or important, either from their general prominence or from their relations to man, as being destructive or beneficial. For the purpose of putting his labours before the public he has commenced issuing monographs of particular orders and families, and has already published one volume on the Orthoptera. He has recently sent forth a second volume, entitled "Manuscript Notes from my Journal of Illustrations of Insects, Native and Foreign; Diptera, or Two-winged Flies." The one thing to be regretted is the smallness of the edition of this valuable work by Prof. Glover, only forty-five copies having been issued.

SOME recent numbers of the *Montreal Gazette* contain a detailed account of the progress of scientific research in Canada during 1874. From this we learn that Mr. James Richardson (of the Geological Survey) spent the months of May, June, and July in a topographical and geological examination of the inlets on the coast of British Columbia, between the 52nd and 55th degrees of north latitude. Mr. George M. Dawson, geologist and botanist to the Boundary Commission, has been engaged in continuing the examination of the region in the vicinity of the 49th parallel. Prof. Bell has been again engaged during the past summer in the North-west Territories. Mr. Henry G. Vennor spent the greater part of the summer in extending his researches through the rear portion of Lanark County, Ont., and towards the end of the season had succeeded in working out the geological structure of the whole of it. Further details are given concerning laboratory and other work done during the year by various scientific workers, all showing considerable activity in science on the part of the Canadians.

THE following are the probable arrangements for the Friday Evening Lectures at the Royal Institution after Easter:—April 9, Sir William Thomson, LL.D., F.R.S.: "Tides." April 16, Prof. Gladstone, F.R.S., M.R.I.: "Progress of Science in Elementary Schools." April 23, Prof. Ramsay, LL.D., F.R.S.: "The Pre-Miocene Alps, and their subsequent Waste and Degradation." April 30, Walter Noel Hartley: "Action of Heat on Coloured Liquid." May 7, M. Cornu (École Polytechnique): "Velocity of Light." May 14, John Evans, F.R.S.: "Coinage of the Ancient Britons and Natural Selection." May 21, J. Baillie Hamilton: "Application of Wind to Stringed Instruments." May 28, Col. Lane Fox, M.R.I.: "Evolution of Culture."

THE additions to the Zoological Society's Gardens during the past week include a Lesser Sulphur-crested Cockatoo (*Cacatua sulphurea*) from Moluccas, presented by Mr. H. W. Wood; an Annilated Snake (*Leptodira annulata*) from Jamaica, presented by Mr. H. B. Whitmarsh; a Diana Monkey (*Cercopithecus diana*) from West Africa; a Common Rhea (*Rhea americana*), three Snowy Egrets (*Ardea candidissima*), a Common Boa (*Boa constrictor*) from South America, purchased.

SCIENTIFIC REPORT OF THE AUSTRO-HUNGARIAN NORTH POLAR EXPEDITION OF 1872–74 *

III.

DURING winter the air seemed always to contain particles of ice; this was seen not only by parhelia and parselenæ when the sky was clear, but also in astronomical observations. The images of celestial objects were hardly ever as clear and well defined as they are at home, although the actual moisture in the atmosphere was far less. It happened very often that with a perfectly clear sky needles of ice were deposited in great quantities upon all objects. It was quite impossible to determine the quantity of atmospheric deposits, as during the snowstorms no distinction could be made between the snow actually falling and that raised from the ground by the storm; it was remarkable, however, that during the first winter the quantity of snow was small compared with that of the second winter, when the snow almost completely buried the ship (this happened near Franz-Joseph's Land). The same proportion was repeated in the quantity of rain during the first and second summer; in the first only a little rain fell late in the year, while in July 1874 it rained in torrents for days.

Clouds are naturally of a very different character from those seen at home; nimbus and cumulus are never seen. The form of cloud is either that uniform melancholy grey of an elevated fog, or cirrhus; the latter consists of round but undefined masses of fog at but a small elevation, therefore somewhat different from the cirrhus of the temperate zone. Instead of clouds, fogs are prevalent, now higher, now lower, and twenty-four hours of clear weather rarely occur during the summer; generally the sun is seen for a few hours, then to disappear again behind the thick fogs. Melancholy and depressing as the effect of these eternal fogs may be, they are nevertheless necessary for the general conditions of the ice; they form the binding media for the heat of the sun's rays, and melt more ice than the direct rays.

Parhelia and parselenæ were often observed; they always were certain indications of snowstorms that followed them. A new phenomenon was only observed once, when, besides the double system of parhelia, two other mock suns appeared on the same altitude with the real sun.

On the whole path which the vessel described soundings were made constantly, and the depth of the sea was found to increase towards the east; on the easternmost point, 73° E. long., there were 400 metres of water, and the depth steadily decreased towards the west. In front of Franz-Joseph's Land there is a bank which seems to reach as far as Nowaja Semlja; beyond it the depth increases again. The whole area east of Spitzbergen rarely exceeds 300 metres in depth. Lieut. Hopfgarten specially constructed an instrument to fetch up dredgings, which was frequently done. The deep-sea temperatures were measured with Casella's minimum and maximum thermometer, and these measurements were continued throughout the winter. They showed a slight increase in the temperature at the bottom. The percentage of salt in the sea-water at different depths was also determined. Until the ship was blocked up the surface temperatures of the sea were also measured. Lieut. Weyprecht thinks that, as a rule, too much importance is attached to these, as the state of the weather is not taken into account, and it is just that which has the greatest influence upon the surface temperature; it is quite wrong to imagine the existence of currents from observations of this kind.

During their drift the explorers made good use of the dredging net; it was generally kept on the bottom during half a day, and thus areas of several miles' extent were examined. The collection obtained in this way no doubt completely represents the fauna on the bottom of the sea which the explorers visited. At places animal life was so plentiful that the net came to the surface completely filled. Crustaceæ were particularly plentiful; unfortunately the larger specimens remained in the ship, as they could not be transported. Dr. Kepes has handed the valuable collection to the Imperial Academy of Sciences (Vienna), and specialists are now busily engaged upon it. Other collections had to remain behind, but were not very valuable, as the explorers only touched land during winter, when everything was covered with snow; they certainly possessed a rather complete collection of birds, but these were all known species, with the sole exception of a Lestris, which Dr. Kepes could not define. Of great value, however, were sixty-seven bearskins, which had already been prepared and well packed; there were some splendid skins amongst them, most of them winter skins, which are rarely obtained in trade and are much finer than the summer skins.

Higher animal life is rather limited in those regions; the principal representatives are the polar bear and the seal, the former in such numbers that the explorers could never leave the ship without weapons; he caused them many a disagreeable surprise, but was always a welcome guest, as he provided them with a fresh and strengthening repast. The seal, in two species, *Phoca barbata* and *Phoca grœnlandica*, is everywhere where open water appears between the ice, although not in such quantities that seal-hunting would pay. The walrus was only seen once, not far from Franz-Joseph's Land, although the explorers often passed over good walrus-ground. Of whales they only saw one species in the vicinity of coasts, where it was very frequent.

Birds were very numerous near the land, but the further the ship drifted away the scarcer they became, and during the last part of the explorers' retreat in the ice the appearance of a bird was a rare phenomenon.

Interesting as all these observations doubtless may be, and in spite of the numerous and long tables they contain, they yet do not possess that high scientific value which might be reached under different circumstances. They only give us a picture of the extreme *effects* of natural forces in the Arctic districts, but on their *causes*, the *why*, we are just as much in the dark as before; and the reason of this lies in the fact that there are no simultaneous observations in another district for comparison. Only when we possess those shall we be enabled to make correct conclusions as to the causes, the origin, and the nature of the abnormal phenomena in the Arctic Zone. The keys to many enigmas in nature, which for centuries it has in vain been tried to solve—such as those in terrestrial magnetism, electricity, and the best part of meteorology, &c.—are doubtless hidden near the poles of the earth; but as long as polar expeditions are nothing more than an international race in honour of one or another flag, having as principal object only to get a few miles nearer to the pole than the last explorers, so long these enigmas will most decidedly remain unsolved.

Pure geographical research, *i.e.* Arctic topography, which until

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* Die 2. Oesterr.-Ungarische Nord Polar Expedition, unter Weyprecht und Payer, 1872–74. (Petermann's Geogr. Mittheilungen, 1875; heft ii.) (Continued from p. 398.)